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ABSTRACT

Minority groups encounter barriers to participation in boating and fishing and may not have equal access to these activities. Racial and ethnic influences on outdoor recreation participation are viewed from four theoretical perspectives. For each perspective, practices are presented that would remove or lessen socioeconomic barriers that constrain access. The marginality perspective holds that historical barriers in education and employment have negatively affected income available for recreation. Educational practices that help individuals surmount marginality factors include those that are offered for free or reduced cost and provide necessary equipment or transportation. The subcultural hypothesis states that cultural factors are more significant than socioeconomic constraints in explaining recreation participation among minority groups. Educational practices sensitive to cultural influences include managing for subsistence, supporting family participation, and employing diverse program staff. The key assumption associated with the assimilation perspective is that assimilation leads to similarity between majority and minority groups. Cultural assimilation is more important in predicting choices of activities, while primary group assimilation is more important in understanding site choices. Related practices include providing bilingual information and respecting differences in views of nature. Participation in recreation activities is affected by two types of discriminatory acts--interpersonal and institutional. Relevant practices include encouraging diversity of participants on-site, employing diverse staff, monitoring agency behavior, and promoting equal protection from environmental risks. Evaluation methods and research needs are discussed. (Contains 52 references.) (TD)

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Defining Best Practices in Boating, Fishing, and Stewardship Education: Challenges and Opportunities for Reaching Diverse Audiences

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Abstract – This paper draws on the social science literature on race, ethnicity and outdoor recreation to propose how "best practices" for boating, fishing, and stewardship education might be defined. It begins with an overview of a framework for arriving at best practices that consider marginality, subcultural, assimilation, interpersonal discrimination and institutional discrimination factors. Each of these factors has been shown to have distinct effects on recreational participation and all require vigilance to overcome. Seeking input from diverse audiences at all phases of program planning and service delivery can trouble shoot problems before programs are implemented. Input also could be sought through periodic focus groups sessions or through establishing formal channels with advisory groups.

Introduction

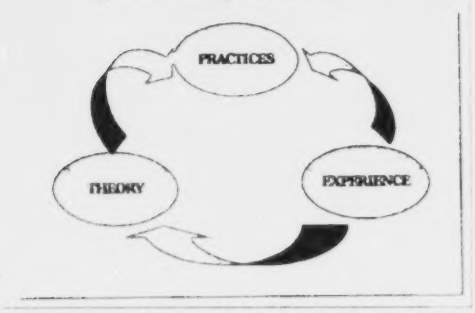
Over the past decade fisheries managers have become more knowledgeable of the motivations and social benefits associated with fishing, boating, and stewardship education. In large measure, their knowledge has been enhanced by research on the human dimensions of fisheries management (e.g., Holland and Ditton, 1992). Also, over the past decade, there has been growing awareness among managers and researchers that substantial segments of the population encounter barriers and constraints to participation in boating and fishing and that opportunities for these activities may not be equally accessible to a broad segment of the American population (Henderson, et al. 1989; Gramann, 1996).

Indeed, a growing body of social science research indicates that compared to the majority population, racial and ethnic minority groups are less likely to participate in many forms of natural resource-based recreation activities and are especially less likely to participate in water-based recreation (Dwyer, 1994; Floyd, 1999; Gramann, 1996). The disparity in participation between the majority and minority population is a major concern among resource managers for at least two important reasons. First, racial and ethnic minority populations, particularly Hispanic populations, will dramatically increase their share of the U.S. population over the next several decades. In the State of Texas, the current population characterized as "minority" will become the "majority" population by 2020 under a variety of population growth scenarios (Murdock et al., 1997). Second, and related, if current recreation preferences and rates of participation of persist into the future, the probability of lower demand for resource-based activities of interest to fisheries, boating, and stewardship professionals increases. Hence, in the public sector at least, the cost of providing fishing, boating and stewardship education opportunities may be borne increasingly by a smaller share of the population. This impact could be particularly severe in regions or states with substantial racial and ethnic minority populations.

There is research evidence that indicates that recreation behaviors, like other social behaviors, result in part from parental and community socialization during childhood and early adolescence. For example, a series of community studies by John Kelly (1974, 1977) found that two-thirds of all adult activities learned during childhood persist through adulthood. More recently, Scott and Willits (1989, 1998) analyzed survey data originally collected from individuals in 1947 and again from the same individuals in 1992. They found that the frequency of participation in a variety of recreation activities (socializing, formal organizations, intellectual activities, sports, and art) were positively correlated with participation in these activities much later in life – 45 years in the latter 1998 study! Studies of outdoor recreationists have also revealed that early childhood or adolescent participation predicts involvement in later life (e.g., O'Leary, Dottavio, and McGuire. 1987).

In recent years a number of outdoor "socialization" programs have been implemented to teach outdoor skills in order to stimulate involvement in outdoor sports such as fishing and hunting. One of the most visible programs targeted women is *Becoming An Outdoors-Woman* (Hall, 2000). In the State of Texas, Texas Parks & Wildlife administers a grant program, the Community Outdoor Outreach Program (COOP), which provides money to non-profit organizations at the "grass-roots" level to provide outdoor education for under-served populations. These kinds of efforts are being duplicated around the country to meet the challenges

Figure 1. Defining Best Practices



and opportunities presented by a society that is becoming increasingly diverse. To mount an effective campaign to increase involvement of racial and ethnic minorities in fishing, boating, and stewardship education, "recruitment and retention" strategies should be anchored in both theoretical and experiential knowledge. In other words, boating, fishing, and stewardship *education* should be supported by scientific literature and experiences from professionals in the field. As these practices are "field tested" the results can be used by other professionals and by researchers to better understand the factors associated with participation in boating, fishing, and stewardship education as defined by theory, practice, and experience (Figure 1).

This paper draws on the social science literature on race, ethnicity and outdoor recreation to propose how "best practices" for boating, fishing, and stewardship education might be defined. It begins with an overview of a tentative framework for arriving at best practices. Next, methods of evaluation for gauging effectiveness for education programs for diverse audiences are briefly reviewed. In the concluding section, gaps that exist in the literature that limit understanding and professional practices associated with boating, fishing, and stewardship education are presented. Recommendations for future research are also outlined.

A Framework for Defining Best Practices

What follows is a tentative guiding framework for defining best practices in boating, fishing, and stewardship education. The framework provides a heuristic tool for developing strategies for reaching racial and ethnically diverse audiences. In some cases, existing education program and services already incorporate elements of this framework. In other cases, opportunities for developing new educational strategies might be suggested.

Racial and ethnic influences on outdoor recreation participation have been viewed from four theoretical perspectives. These perspectives constitute the basis of the proposed framework shown in Figure 2. The key assumption, examples of empirical indicators, and examples of existing or potential practices are shown for each perspective.

Marginality Factors

The marginality hypothesis was developed to explain low participation in wildland recreation among African-Americans (Washburne, 1978). It holds that low rates of participation among African-Americans result from limited access to socioeconomic resources that, in turn, result from historical patterns of racial discrimination. Stated differently, historical barriers in education and employment have negatively affected earnings that in turn affect disposable income available for recreation opportunities. Practices guided by this perspective would attempt to remove or lessen socioeconomic barriers that constrain access.

Current data on household income by race and ethnicity show significant gaps between White, non-Hispanics and African-Americans, Hispanics and American Indians and Alaska Natives (Table 1). While there are no significant differences between White, non-Hispanic and Asian/Pacific Islander households, incomes for African-American, Hispanic, and American Indian households lag behind, with African-American households earning less than all other groups. Therefore, income is a significant barrier to consider in planning education programs, particularly for less affluent African-Americans.

Table 1 -- Household Income by Race and Ethnicity: 1999 Median Income

Race/Ethnicity	Median Income (dollars)
White	44,366
Black	27,910
Hispanic	30,735
Asian and Pacific Islander	51,205
American Indian	30,784

Source: U.S. Census Bureau, Current Population Reports P60-209, Money Income in the United States: 1999, U.S. Government Printing Offices Washington, D.C. 2000

ing, and stewardship education. For example, a community-based organization located in Dallas known as the Inner City Fishing Institute, founded and directed by Mark Cole, engages African-American youth in fishing and boating education. The Inner City Fishing Institute teaches fishing and boating skills. It also emphasizes how the act of fishing connects with the ecology, academic achievement in math and science, and overall community well being.

Subcultural Factors

While marginality factors direct attention to socioeconomic constraints, the subcultural hypothesis states that racial and ethnic differences in outdoor recreation participation can be attributed to different norms, beliefs, values systems and socialization practices adhered to by different racial and ethnic groups (Washburne, 1978). According to this perspective, cultural factors rather than socioeconomic constraints are more significant in explaining recreation participation among minority groups. Hence, practices guided by this perspective would attempt to reflect the culture of those being served. Subcultural factors can influence participation in boating, fishing, and stewardship education in several important ways.

First, the pathway into boating, fishing, and stewardship education is leisure socialization. Being taught "how to" precedes any involvement in any activity. Acquiring skills, learning the satisfactions and outcomes, and internalizing the meanings of activities result from the socialization process (Kelly, 1983). Most recreation activities are taught and learned within the intimate confines of home and family (1987). The influence of culture is likely to be strongest in this setting. Why? Decisions about leisure are made in relative freedom and are less subject to conformity pressures found in work, school, or other settings. Therefore, it is more likely that ethnic differences will be reflected in choices of leisure activities initiated in family contexts (Gramann, Floyd, & Saenz, 1993). Such influences do not necessarily lead to non-participation or low participation. In many instances, differences in *style* of participation may result. In other words, fishing may take on different meanings for different groups; different groups may prefer different approaches or techniques; or for some ethnic groups fishing may be a core cultural activity as is the case for many American Indians and Native Alaskan people (Burger, 2000).

For example, Toth and Brown (1997) studied racial differences in motivations for fishing among Blacks and Whites in two communities in the Mississippi Delta. The salience of "subsistence" motivations among African-Americans and "for sport" motivations among Whites was a key difference between these groups. They concluded, "different groups have unique histories particular to their experiences in the Mississippi Delta and thus multiple motivations and meanings for fishing" (p.141). Among some African-Americans, generally, fishing may be associated with recollections of the more positive aspects of rural living.

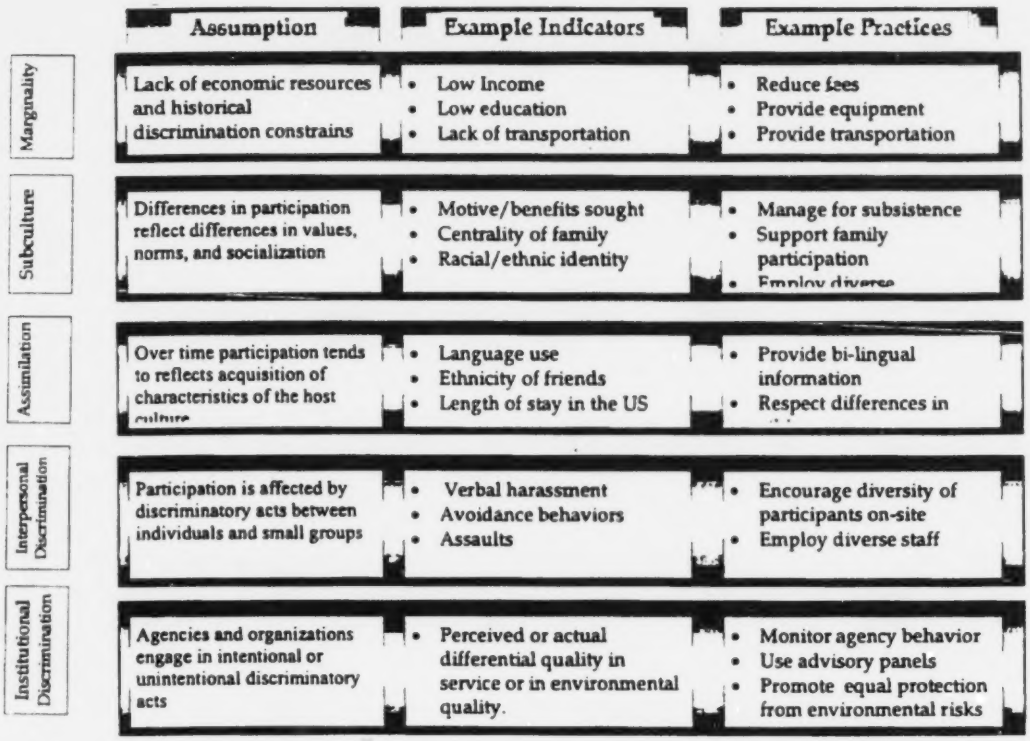
The importance of family in Hispanic culture and its influence on outdoor recreation behaviors has been documented by several studies (e.g., Simcox & Pfister, 1990; Bass, Ewert, & Chavez, 1993; Gramann et al., 1993; Shaull & Gramann, 1998). Based on a telephone survey of Phoenix residents, Gramann et al. (1993) reported that Mexican-Americans rated "doing something with family" and "doing something with children" higher as motives for outdoor recreation than White, non-Hispanic respondents. Likewise, Simcox and Pfister (1990) and Bass et al. (1993) found that both U.S.-born and Mexican-born Hispanics rated being with family significantly higher than White, non-Hispanics. The importance of family among Hispanic recreationists is usually reflected in the size and composition of recreation groups (Gramann, 1996). That Hispanic recreation group sizes typically exceed those of Whites and African-American is well documented (Carr & Williams, 1993; Hutchison & Fidel, 1987; Irwin, Gartner, & Phelps, 1990). Hutchison (1996) has documented the importance of family leisure participation among the Hmong, an ethnic group with origins in Southeast Asia.

Educational practices sensitive to cultural influences as described might include opportunities for family participation and opportunities that support or reinforce cultural identity. The subcultural perspective might also suggest that program staff (especially professional staff) include members of racial and ethnic groups being served.
Planning fishing and boating education activities as part of established ethnic community activities (e.g., festivals) when possible rather than sponsoring "stand alone" agencies events can send a positive message to minority communities. The latter approach (i.e., "stand alone events") could be labeled as paternalistic and condescending, especially when it might appear that racial and ethnic minorities are characterized as deficient in their knowledge of outdoor activities.

Assimilation

A number of studies have used assimilation theory to understand the role of ethnicity in recreation behavior. Assimilation refers to "the process of boundary reduction that can occur when members of two or more societies meet" (Yinger, 1981: 249). Two types of assimilation have been examined in recreation research:

Figure 2.
A Framework for Defining Best Practices for Fishing, Boating and Stewardship Education



Examples of educational practices developed to help individuals surmount "marginality factors" include those that are offered for free or at reduced costs, provide necessary equipment and gear, or transportation. Scott, Floyd, Pepper and Callahan (1998) found that most recipients of Texas Parks and Wildlife's COOP used the funds for purchasing equipment, transportation, admission fees, salaries, and other program costs. Increasing opportunities for urban fishing opportunities, with special emphasis on young anglers, represents an important strategy related to marginality concerns. In 2000, 53% of all African-Americans in the U.S. lived in the central cities of the largest metropolitan areas.

Clearly, outreach efforts such as the Texas-based KIDFISH program must assume a larger role in reaching urban minority communities. Targeting all Texas youth, KIDFISH is the result of a partnership involving the Parks and Wildlife Foundation of Texas, the Sharelunker Foundation, and Texas Parks and Wildlife (TPW News, 1998). KIDFISH provides grants to local communities to introduce youth to fish through hands-on fishing experiences. The program also requires grant recipients to show how their proposals increase access to fishing opportunities. Communities have used the grants for conducting angler education sessions, construction of fishing piers and educational signs, and other improvements to infrastructure for increasing access.

Since racial and ethnic minorities to comprise a "majority" share of the largest metropolitan areas in Texas and other states, programs like KIDFISH must be adapted to appeal to racially and ethnically diverse audiences. There are opportunities to partner with local "grass-roots" to accomplish the goals of boating, fish-

cultural assimilation (also known as acculturation) and structural assimilation. These concepts have been applied to permit closer observation of subcultural factors.

Cultural assimilation refers to minority group acquisition of cultural characteristics of the majority group (or host society) such as language, diet, and religion (Gordon, 1964). A commonly used indicator of cultural assimilation is language use: to what extent do minority group members used their native language versus English. Structural assimilation refers to the extent of social interaction between majority and minority groups in primary (e.g., family and friendships) and secondary (e.g., school, work, etc.). The key assumption associated with this perspective is that greater assimilation leads to similarity between majority and minority group members. In general, studies of Mexican-American recreation suggest that cultural assimilation is more important in predicting choices of activities while primary group assimilation is more important in understanding site choices. In relation to boating, fishing, and stewardship education, these findings indicate that decisions to participate in these activities are likely to be influenced by cultural factors; decisions about where to participate are subject to primary group influences.

Trends in immigration are particularly relevant to assimilation. Immigration (and descendants of immigrants) is projected to account for "approximately three-fifths" of the U.S. population growth through 2050 (Murdock, 1995). Asia and Latin America account for 84% of immigrants to the U.S. (Murdock, 1995). Thus the vast majority of "new Americans" come from countries where English is not the primary language and where Western European traditions do not form the foundation of societal culture. This fact has direct implications for stewardship education.

Stewardship activities in the U.S. are based primarily on European-North American views of nature. Traditionally, such views make a sharp separation between of "man" and nature (Cronon, 1996). In the case of resources such as wilderness, parks, and other protected areas, stewardship activities aim to limit if not remove the the influence of humans. A number of writers have shown that Native Americans (McDonald and McAvoy, 1997), Latinos (Lynch, 1993) and African ethnic groups (Burnett & Conover, 1989) do not compartmentalize and separate nature from human. Using Lynch's (1993) terminology, Western ideal landscapes are pristine and untouched; for Latinos, ideal landscapes are peopled and productive. She argues that traditional resource management practices may ignore the needs of Latino anglers:

> Livelihood issues are important to U.S. Latino populations. Concern about limitations on the recreational bluefish catch in Atlantic coastal waters is one such example. Yet even this debate shows the distinction between 'recreation' and 'livelihood' is a slippery one. The joy of going out onto the ocean to wrestle with the feisty bluefish comes from contact with nature, but seeking that joy may be justifiable only when it can bring benefit to the collective. Giving fish to family and neighbors may legitimate as well as intensify the natural experience. How different this is from the Anglo ideal, where the ultimate destination of the fish is unimportant compared to the contest itself (p. 117).

In this case, Latino anglers in New York supported marine conservation while arguing that recreational catch restrictions limit their ability to use their catch as an occasion to show generosity to family and friends. For these anglers, environmental ethics are linked to social networks, composed of family friends and neighbors (Lynch, 1993).

Interpersonal Discrimination

Interpersonal discrimination refers to actions carried out by members of dominant racial or ethnic groups that have differential and negative impact on members of minority group members (Feagin, 1991). Such actions take place between individuals or in small group situations. For example, racial slurs directed at a family of Korean-American anglers because of their ethnic background or avoidance behavior on the part of White recreationists when multiple families of African-Americans enter a campground are examples of discrimination at the interpersonal level.

Does interpersonal discrimination influence participation in fishing, boating, and stewardship education?[1] Researchers have yet to examine this question directly. Research conducted in other recreation settings offers some clues. For example, in a study of Chicago's Lincoln park, Gobster and Delgado (1993:78) reported that discrimination "has affected 1 in 10 minority users." African-Americans, followed by Hispanic-Americans and Asian-Americans, were most likely to report acts of discrimination. These acts included verbal harassment,

[1]In my own experience, I attribute learning to swim later in life to my mother's belief that "White men" had something to do with the drowning death of her brother in the 1950's. She discouraged participation in swimming and boating for this reason.

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physical gestures, assaults, nonverbal cues, and harassment from law enforcement officers. A focus group conducted by Wallace and Witter (1992) revealed that a significant number of African-Americans in St. Louis did not camp because they felt vulnerable to racial intimidation. Floyd, Gramann, and Saenz (1993) found that perceptions of discrimination among Hispanics in Phoenix tended to decrease visits to 8 of 13 sites on the nearby Tonto National Forest. Most of the sites offered fishing and boating opportunities (e.g., Lower Salt River, Saguaro Lake, Canyon Lake Recreation Area, Apache Lake Recreation Area). Finally, a study set in the Detroit area found that African-American visits to regional parks were negatively affected by interracial conflicts with white park users.

The extent to which interpersonal discrimination carries over to fishing, boating, and stewardship education is not known. There is enough empirical evidence on this issue, however, to suggest that it could be a factor. As the nation becomes more diverse there is more opportunity for interracial and inter-ethnic contact. Managers and providers of boating, fishing, and stewardship education must be aware of the social climate their settings engender. Do they make members of different ethnic groups feel welcome? Settings with racially and ethnically diverse participants and staffs are very likely to attract diverse audiences. For example, Taylor (1992) found that African-Americans preferred to use parks that other African-Americans were also using.

Institutional Discrimination

The final perspective to introduce is *institutional* discrimination. Rather than drawing attention to individual and interpersonal interactions, institutional discrimination focuses on the "behavior" of organizations, bureaucracies or corporate entities. This behavior can be intentional (which is clearly illegal) or unintentional with equivalents outcomes. In other words, unintended institutional discrimination can have negative consequences. How does this work? Feagin and Eckberg (1980) developed two concepts that illustrate this form of discrimination: side-effect discrimination and past-in-present discrimination. Side effect discrimination "involves practices in one institutional or organizational area that have an adverse impact because they are linked to intentionally discriminatory practices in another" (p. 13). For example, historically, discrimination in housing and mortgage lending contributed to residential segregation in U.S. cities around the country (Massey & Denton, 1993). This situation has contributed to the practice of redlining in other industries. Redlining refers to the practice of not doing business in low-income, inner city minority communities. While such practices have been reversed in large measure, they have residual effects. A commonly observed outcome is the migration of potential tax revenues and concomitant services (recreational and otherwise) to affluent suburbs.

Past-in-present discrimination leads to similar outcomes. It refers to "apparently neutral present practices whose effects derive from prior intentional discrimination practices" (Feagin & Eckberg, 1980). Recreation resource management policies that are informed primarily by the opinions of past and current users have the potential result in discriminatory outcomes. Consider this hypothetical example. Imagine a region where the population is quite diverse ethnically, and where there is strong demand for subsistence fishing. A stocking program that caters to mostly white, traditional sport anglers while benignly neglecting the preferences of minority recreationists who fish for sport and subsistence would exhibit "past-in-present discrimination" described by Feagin and Eckberg.

Environmental justice can also be related to institutional discrimination. Environmental justice refers to the inequitable distribution of environmental protection across communities defined by race, ethnicity, or income. Beginning in the 1980's several studies reported that racial and ethnic minorities were disproportionately exposed to environmental hazards (Mohai & Bryant, 1992). In fact, several studies have shown that racial and ethnic minorities are particularly vulnerable to risks associated with catching and consuming fish caught in contaminated waters (Burger et al., 1999; Heatwole & West, 1985; West, 1992; West, Fly, Larkins, & Marans, 1992). Such findings have led social justice advocates to charge management and regulatory agencies with environmental racism (Shanklin, 1997).

How public agencies, particularly federal agencies and their cooperators, should respond to claims of environmental injustice or racism can be found in Executive Order 12898, "Federal Actions to Address Environmental Justice in Minority and Low-Income Populations." Directives in the Executive Order which speak directly to risks associated with fishing include: (a) identification of differential patterns of consumption among minority and low-income populations; (b) collection, maintenance and analysis of information on consumption patterns dependent on fish and/or wildlife for subsistence; (c) communication of known risks associated with consumption to the public; and (d) ensuring that communications are accessible and can be understood (Executive Order No. 12898, 1994).

How should knowledge of these forms of institutional discrimination shape boating, fishing, and stewardship education practices? In abstract, yet real terms,

vigilance is critical. Being alert to impediments, barriers, or constraints associated with historical patterns of discrimination is a very practical matter. Seeking input from diverse audiences at all phases of program planning and service delivery can "trouble shoot" problems before programs are implemented. Input could be sought through periodic focus group sessions or through establishing formal channels (e.g., "community advisory councils"). Regarding environmental justice issues, for programs targeting minority communities where subsistence fishing is practiced, risk communications should be prominently featured. Risk information should especially target immigrant communities where English is not the primary language.

Evaluation Methods for Best Practices

Systematic evaluation of education programs and outreach effort is necessary for determining whether educational program objectives are achieved. This section is concerned with identifying methods for gauging effectiveness of education programs associated with boating, fishing, and stewardship. It provides a brief review of five methods for collecting data that can be used to make judgments about program effectiveness: surveys, focus groups, ethnographic methods, longitudinal studies and experimental designs. Also, the section poses the question of how program effectiveness success should be defined.

Survey Methods

Much of the research on racial and ethnic minority recreation participation is based on survey samples, either on-site or off-site using telephone or household interviews. On-site interviews with minority participant is an effective means of gaining information such as extent of fishing and boating activity, social group size and composition, and other participation characteristics. On-site survey samples exclude non-participants however. While there is interest in both populations, there may be greater interest in stimulating participation among non-participants.

Population surveys of national, regional or statewide scope on the other hand can be designed to include subgroups of participants and non-participants. Population surveys allow researchers to determine specific rates (as percentage of the population) of boating, fishing, and involvement in stewardship activities. Large population studies are necessary for establishing trends and baseline information. Data from the National Survey on Recreation and the Environment and National Survey of Fishing, Hunting, and Wildlife-Associated Recreation are important for this reason. Results from population surveys also tend to be generalizable.

Conducting surveys of minority populations in urban, inner- city can be difficult however. Minorities who live in inner-city areas are generally regarded as "hard-to-reach" populations with characteristically low response rates (Pottick & Lerman, 1991).

Focus Groups

Focus groups are being used more frequently in outdoor recreation research as an alternative and as a complement to surveys. They can be an effective means of collecting data on outcomes associated with educational practices. Focus groups consists of a small number of individuals assembled to discuss a topic of interest to a researcher or to an agency. Focus groups produce qualitative data through a focused discussion among individuals who may possess some common attributes (Krueger, 1988). Krueger (1988) gives several advantages of the focus group method: (1) it allows the interviewer to probe; (2) they are usually not expensive; and (3) they provides timely results. The major disadvantages are that data derived from the discussion may be difficult to analyze and problems with logistics, getting individuals together and finding a setting conducive for conversation (Henderson & Bialeschki, 1995).

The U.S. Army Corps of Engineers Waterways Experiment Station has experienced success in using a series of focus groups to gain insight into African-American and Native American water-based recreation preferences (see Dunn, 1998; Dunn & Feather, 1998). The department of Texas Parks and Wildlife has also used this method to gauge minority participation in outdoor activities (Hall, 2000).

Ethnographic Methods

Another alternative to "quantitative" surveys is the ethnographic method. Ethnographic research differs from traditional survey research by placing the researcher inside of the community being studied. The advantage of having an insider's view is being able to see how a leisure activity, such as boating and fishing, is connected to the daily patterns and routines of an ethnic community. This approach to evaluation holds potential for understanding how members of ethnic communities define fishing, boating, and stewardship in relation to their own culture. Information gathered in this way can be used to tailor programs to meet needs of particular ethnic communities. Success with this approach depends on four factors: (1) the ability of a researcher to establish an identity within an ethnic community; (2) the project must originate with community need rather than an agency priority; (3) recognition that relationships are the most important task in the process; and (4) remem-

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bering that community members are the experts on the own culture (McDonald and McAvoy, 1997).

Longitudinal Studies

Program evaluations should employ longitudinal designs to track participation over time and to observe long-term changes in behavior. Longitudinal designs rely on panels, a fixed number of individuals who respond to queries over time (e.g., weeks, months, or years) (Churchill, 1991). In contrast, cross-sectional studies are based on measurements taken at only one point in time. The greatest advantage of a longitudinal design, as stated, is the ability to examine enduring participation in an activity. As Scott and Willits (1989, 1998) demonstrated, panel studies provide opportunities to study recreation involvement of group of individuals over several decades. Disadvantages of this design approach include the effort required to recruit and retain individuals. Mortality, in terms of refusals to participate in subsequent measures, change of residence, death, and other factors, also are disadvantages. This approach however appears most effective for evaluating long-term participation in fishing and boating.

Experimental Methods

Experimental methods are arguably the most effective tools for determining whether a specific intervention leads to a particular outcome. Henderson and Bialescksi (1995) describe experimental studies as "the classic example" of evaluation. In controlled laboratory experiments, the effect of manipulating an independent variable on a dependent or outcome variable can be observed while the effects of other relevant factors are minimized. As they suggest, however, many variables of interest such as skill development, attitudes, and program leaders cannot be controlled and manipulated in experimental designs. While tightly controlled experiments are difficult to employ, field experiments are conducted in realistic or natural settings. Field experiments appear more suitable for relating the effects of educational program components to boating, fishing, and stewardship outcomes.

A major advantage of experimental designs is that the variables in question must be made operational specified prior to the study (Babbie, 1989). In survey research, it is common to collect large amounts of data and then identify operational definitions "after the fact." Developing a priori definitions forces researchers and sponsors to consider what particular outcomes are most relevant for evaluation. Apart from the technical aspects of program evaluation, having to define the meaning of "effectiveness" or "success" may cause agencies and program providers to reflect more deeply on the goals of boating, fishing, and stewardship education. This may serve to clarify an agency's mission with regard to educational practices and may result in a higher level of service for the public.

Knowledge Gaps

There is very little research on racial and ethnic minority group involvement in boating, fishing, and stewardship education. Although the literature on minority involvement in general outdoor recreation is quite substantial, most of this research has focused on land-based recreation (Gramann, 1996). The following statements represent major gaps in the literature and outlines future research needs:

- Compared to other ethnic communities, there is virtually no information on how immigrant populations respond to the fishing, boating, and stewardship education activities. There are opportunities to examine how assimilation processes affect preferences for boating, fishing, and stewardship education.

- Among racial and ethnic groups generally, and among those where English may not be the primary language spoken, there are no studies that demonstrate the most effective ways of communicating stewardship messages. Research on white populations suggests that communications-based management approaches are effective in reducing rule violation (Gramann, 1996).

- Interpersonal discrimination in other recreation settings has been documented. It is not known to what extent this type of discrimination affects participation in water-based activities. In addition, there is little information on how different groups respond to discrimination experiences.

- Subcultural factors (particularly socialization) are important predictors of participation. It is generally assumed that these factors are unique across different ethnic groups. There have been no studies to examine how individuals from different acquire fishing, boating, and stewardship skills and attitudes. How different are the pathways into fishing and boating across ethnic groups?

- Methodologies for evaluating minority involvement in boating, fishing, and stewardship educations should be developed. Although these activities can occur in different types of environments (e.g., marine vs. freshwater fishing), there is some commonality in the underlying components of these activi-

ties (e.g., the presence of water). Opportunities should be sought to explore the design of "standardized" (to the extent possible) approaches around common environmental components. Moreover, longitudinal approaches are needed.

- Research should focus on the agencies and organizations that provide boating, fishing, and stewardship education and not only the audiences being served. History clearly demonstrates that agencies can engage in discriminatory actions. Studies that could possibly reveal institutional barriers (often unintentional) that block minority participation are needed.

- Environmental justice has become an important concern in natural resource management. This is a particular concern in regions where boating and fishing occur in waters contaminated with hazardous materials. Future research should continue to monitor the extent to which minority boaters and anglers are exposed to hazardous materials. Studies should also examine the effectiveness of stewardship education in increasing awareness of these risks.

- There is a need to clearly specify the goals and measurable outcomes associated with boating, fishing, and stewardship education. Clear specification of goals and outcomes is needed.

Summary and Conclusions

This paper attempted to offer some direction for defining best practices in boating, fishing, and stewardship education. Several theoretical concepts were drawn from the outdoor recreation literature on race and ethnicity. These concepts were presented as a tentative guiding framework for planning educational practices for minority populations. The paper also provided an overview of data collection methods used in evaluation research. Finally, a broad outline of research needs was identified. As racial and ethnic diversity increases, strategies will be required to make boating, fishing, and stewardship accessible to the widest segment of the population. This paper sought to provide assistance to researchers and practitioners in this worthwhile effort.

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